ACCREDITED GEMOLOGISTS ASSOCIATION

P.O. Box 996
Laytonsville, MD. 20760

(301) 977-0335

NEWSLETTER

VOL. 3, NO. 2 JULY, 1978©

NEWS OF THE ORGANIZATION

AGA chapters have started in Houston, Los Angeles and San Francisco. The L.A and S.F. people are still organizing, while Houston has already had several meetings to locate potential members and get things started. This chapter is being organized by Dr. Day McNeel, a neurosurgeon who became really interested in the serious study of gemology just a year ago. Dr. McNeel completed the entire GIA course in less than one year and expects his GG diploma shortly! If a neurosurgeon, with his hectic schedule can do the course in less than a year, this should inspire those people who are not perhaps completing as many lessons as they would like to get moving and back on track. News of chapter activities will be presented as they are forwarded to our office.

Current membership now stands at about 115 (see enclosed membership list). This is a fair number, but not anywhere near what it could or should be. It is incumbent on us all to actively seek out other gemologists who do not yet know of the existence of AGA. Every member should set as a goal the immediate contact of another gemologist. An introductory form for AGA is enclosed here to assist you in this project. Once our membership reaches the "magic" 500 level, we will have enough of a percentage of professional gemologists to say that we truly represent the field of gemology. Right now we cannot in all fairness make that claim.

Organizations either grow or decline, but they never stand still. Right now we are growing, although at a very slow pace. The Jewelers Circular-Keystone has promised us publicity later this year. Requests will be sent out shortly for selected members to assist in a mailing program to known gemologists who have never been contacted. With a bit of persistent effort we can reach 500 members before the end of 1978. This is a worthwhile goal that we should strive for.

Apologies are extended to all members for the tardiness of this newsletter, which is about a month late. Future efforts will be made to see that our letter comes out on schedule. In this regard there is still a need for all members to participate in AGA through writing for the Newsletter. Every gemologist who is active in the field sees interesting things every month that would be enjoyably and profitably read about by other gemologists. It is time for you to make a note and leave it in full view on your desk: write article for AGA Newsletter. If this note sits there and stares at you long enough, it may shame you into actually putting pen to paper, or typewriter to paper, whichever is easier. The result multiplied by 115 will be a better Newsletter, a more informative Newsletter, and a much improved AGA.

J.E. Arem, FGA -Editor

OTHER NEWS NOTES

The JC-K in July published a comprehensive survey of the diamond investment field, presenting all the different sides to the issue and giving an in-depth look at some of the more visible companies selling investment stones. The total job is admirable and the most complete survey of this field ever done; however, the tone of the survey is distinctly negative towards the whole investment idea.

By contrast, the First American Conference on Gemstone Investment will be held in Spring 1979 in Washington, D.C. This conference will feature a balanced program of gemologists, laboratory and certification people, dealers, government representatives

(contd.)

and trade association representatives, with a format of speakers plus panels and round table discussions. The setting will be kept informal to allow for maximum exchange of ideas. This conference may result in some press coverage that will be more favorable to the investment concept than has been visible in the past.

* * * * * * * * *

The following tidbit was submitted by Harold Oates, GG, FGA,ASA of Illinois:

" Several weeks ago when I came home, my wife Mary said 'there's a green glass ring lying on your desk that has a diamond missing. A friend of yours left it here and wants you to replace the diamond, or whatever it is that's missing'. Hearing this, I immediately put on my gemologist's hat and looked at it.

The ring was one of the old filligree handsomely made pieces, probably from around 1910 or so. The ring was platinum with 56 small round full cut fine diamonds with an estimated total weight of about 0.28 cts., with one stone missing. The diamonds were bead set and covered the 4 prongs and the horizontal support of the setting. There were also two fine straight baguette diamonds, one on each side of the upper shank, with an estimated total weight of about 0.33 cts. Now for the alledged green glass in the center. The stone looked too good to be true. It measured 12.0x10.53x6.10 mm, and I estimated the weight to be about 5.25 carats. It was emerald cut, highly transparent, with about 5-10% included. The color was an intense uniform fine bluish green and the stone was very well cut with high brilliance. At first I thought it must be an assembled stone. To settle the question, I placed it in some ortho-toluidine, which has an R.I. of 1.57. In this immersion liquid, it looked even better. The next step was to get an R.I., which turned out to be 1.572-1.580. Now was Gemolite time. The few inclusions that were there, viewed at 60X, turned out to be the classic three-phase inclusions seen in Colombian emeralds. There were 5 or 6 of them, very beautiful. The fluorescence under long wave U.V. was a dull red. This was truly a gem quality emerald, the finest I had ever seen. I thought I saw some truly beautiful ones at the Tucson Show last month (i.e., February) but this stone was much better. After playing with numbers, I decided to put a retail value on it of $74,500. When I broke the news to my friend, he almost had a stroke.

Now comes the story, an inevitable development in such cases.

"My brother's wife was given this ring by her mother, who is home dying from some affliction. The old lady removed it from the bottom of a shopping bag wrapped up in a napkin. She said to take this for all the help you have given me."

The above story is true, or so he says. I suggested to him that he should have it appraised and put it in a safety deposit box. They decided to do this after I reappraised it and added the missing diamond.

End of story."

Ed. Note: !!!

* * * * * * * * * * *

From Hamilton Stitt, FGA, of Quebec, Canada:

I have been experimenting with cubic zirconia, in an attempt to establish a simple diagnostic test for mounted stones. I have arranged a binocular microscope with an illuminator similar to what GIA uses as a substage illuminator. On this I place a photo polaroid filter. Behind, or should say above the objective, I have placed a polaroid filter, so that I can use the microscope as a polariscope. All of the cubic zirconia that I have examined under crossed polars with this setup have shown a band of color which changes from a straw yellow through to brown, then to violet, then to blue,depending on the orientation.... The actual colors are reminiscent of those seen in the heat treatment of steel. The problem is that I do not have enough stones to examine, to discover one that does not show this effect. I would be interested in your comments and the possibility of asking the AGA members to check this out.

Ed. Note: Interested members are invited to run this test and submit their results for publication in the next Newsletter.

Received from Kevin Ng of Singapore:

..."Gem trade is flourishing in Singapore but qualified gemologists are rare. I gather from many sources that I am the only FGA in Singapore. There might be one or two GG-s here. I am extremely interested to form a chapter of AGA in Singapore and as soon as I know enough gemologists here, I will write and let you know.

I have resigned from the University of Singapore about 5 months ago and set up my private medical practice in the city, providing gem identification service to the jewele ry trade in my spare time. I will make a contribution to the AGA Newsletter as soon as I have come across an interesting gemstone.

In the meantime, perhaps you could make a press release to the Newsletter that I will be only too happy to meet members of the AGA should they have the opportunity to visit Singapore in the near future. My home address is (..see membership list).. and my telephone numbers are: Clinic phone: 376674 Home phone: 261-0939

Kevin Ng, M.D., Ph.D, FGA

* * * * * * * * * * *

MINUTES OF LAST MEETING (Dale E. Farringer, GG, Secretary)

President Joel E. Arem called to order a regular meeting of the AGA on May 31,1978 at 8:15 PM. It was held in the Hamilton Room of the Sheraton Park Hotel, Washington, D.C.

There were 20 members and guests present. After they introduced themselves, President Arem presented 3 applications for membership, as follows: Michael Loewenthal, GG; Susan Dittmer, GG; Orin Terry, GG. Since all of the applicants had met membership requirements a motion was made and seconded that all three applicants be accepted. The motion was carried.

President Arem commented that because billions of dollars are being pumped into the gem market now and in the next few years, professional gemologists are greatly needed. The members present felt that it was incumbent upon us as a professional group to assist the FTC in setting up guidelines to help eliminate malpractices in gem dealings. It was moved and seconded that President Arem call the FTC to discuss this problem and to offer the services of AGA. This motion was carried.

President Arem announced that Paul Desautels of the Smithsonian Institution had been scheduled to speak, but had to cancel due to another commitment. A very informative substitute program was created utilizing the talents of members attending the meeting. (A summary of the discussion appears on the next page) Ken Vest is a GG who lives in Bangkok and deals in rubies, sapphires and S.E. Asian gems and also manufactures fine jewelry. He spoke on developments in Cambodia, Thailand and Burma. Jerry Call and Ary Reith are residents of Governador Valadares, Brazil. Jerry is a GG and former staff member of the GIA, as well as a superb gem cutter. These men spoke about new gem finds and the current supply situation in Brazil. Theresa and Ray Kuhn, guests at the meeting, are dealers in fine amber from the Baltic area who reside in Florida and travel the USA doing gem shows. Ray and Theresa gave us an overview of the supply of amber from this part of the world.

* * * * * * * * *

Your editor had seen references to some unusual gem names in a recent catalog of USSR gem materials distributed by a Canadian firm. Some research by AGA member Hamilton Stitt, FGA, gives us the following:

Rogovic - russian word indicating a variety of chert
Belomorite - trade name for moonstone (see Min. Mag., v. 27 p. 266)
Charoite - a new ornamental material appearing now in quantity on the market, medium to deep purple color, mixed with other minerals; rather fibrous in nature, but hard.
Listvenite - variegated green and white material, consisting of several minerals with differing hardness. There are also minute grains of metallic sulfide. A drop of acid gives no violent effervescence. Softer areas (undercut) give H. 3.5 to 4. The S.G. is 2.93. Some grains show perfect cleavage on broken surfaces. (note - the SG is that of the composite material, not isolated mineral fractions).

COMMENTS AT AGA MEETING 5/31/78 (Notes by Joel E. Arem, Ph.D, FGA)

KEN VEST: Thailand has a bad reputation for providing overpriced and badly cut stones. Burma is occupied by rebel forces and there is continuous sporadic fighting. The supply of good jadeite is severely limited. Cambodia is totally messed up politically. Fine rubies are being produced within Cambodia, near the Thai borner. Note that these are NOT Thai stones. The Thai supply is thin, perhaps from a few new mines. But there are better and finer rubies now in Bangkok. NO mining is taking place in Cambodia at all, due to the rise to power of a Communist government. Most so-called "Thai sapphire" actually comes from Australia.

There is a new source of sapphire in N.W. Thailand, perhaps on a par with the classic locality of Chantabun. The Australian mines at Anakie, Queensland are now essentially exhausted. A new source, at Invernell, produces stones but not as good as Anakie, and mining is much more expensive leading to higher stone prices.

Many people who come to S.E. Asia, especially tourists, are ripped off by dealers who sell fakes and synthetics, especially in Bangkok. People think they are getting bargains when they deal with people in back alleys and tiny shops that are impossible to find again. The individual who sells a tourist such a fake is never seen again making exchange or refund impossible. Note that there is a continuing supply of ruby on the market, even a trickle of stones from Burma, but prices go from higher and higher to outrageous.

JERRY CALL: Gem cutting in Brazil has improved vastly in the last few years and ranks with fine cutting from other parts of the world. The recent big news from Brazil is that of a major find of rubellite tourmaline at Goyabira (about 100 km. from Gov. Valadares). Most of the stones have been sold in Germany and Japan. The major portion of the find is not available for sale right now. The material is being sold slowly and in a controlled way to avoid depressing prices through oversupply. Some of the better rubellites from the new find are selling currently in Valadares at prices up to $200 per carat!

Green tourmaline is being found in Goyaz, as well as some bicolor material. But there is NO new aquamarine being produced at all. Valadares, once a major supplier of aqua, has few stones to offer. Prices of aquamarine, currently at all time highs, are going even higher.

Heat treatment of stones is prevalent in Brazil, especially treatment of dark green tourmaline to produce a vibrant blue-green. Nearly all the blue topaz coming out of Brazil is irradiated and heated material. Precious topaz is at price levels undreamed of 5 years ago and moving even higher, and large stones are very hard to obtain.

RAY KUHN: Baltic Sea amber is being produced only in the U.S.S.R. or its territories, such as Poland (part of Poland and the USSR that was once E. Prussia). This amber is very scarce now. The whole area is under guard, and information about production is hard to get. Most of the amber is exported; perhaps as much as 90% of the amber coming from the U.S.S.R. is pressed. Many tons are exported every year. Japan is the primary buyer, with the Communist Block countries next, and very limited demand in the U.S. However, the American market is growing. Baltic amber has "water lily"inclusions. These are produced by heating because raw amber is filled with tiny air bubbles with explode to create spangle-like feathers. Pressed amber is granular and fine grained; the material is pressed under extremely high pressure but the texture can be seen microscopically. Unfortunately there is a NEW IMITATION on the market, a plastic with the same specific gravity as amber. This makes the classic amber test, of floating the sample in brine, non-diagnostic.

There is considerable amber in the Dominican Republic, discovered about 1930. This material is considerably younger than Baltic amber and is reputed to be slightly softer. A distinguishing characteristic of Dominican amber is the profusion of insects in it, as well as such oddities as small lizards and even butterflies that have been reported in the past. Some Dominican amber also has a distinct blue coloration in reflected light, an effect due to inclusion of certain hydrocarbons. By contrast, insects in Baltic amber are extremely rare and specimens of this type bring very high prices among connoisseurs.

HOW TO FEEL THE DIFFERENCE BETWEEN A DIAMOND AND A CUBIC ZIRCONIA by Hans Andersen, GG

Today gemologists are very much accustomed to standard testing procedures, Very rarely do we allow ourselves to apply the natural senses that nature has supplied us with. Our science has, within a short period, entered into the technological age, and we now rely on expensive scientific equipment that has moved beyond the purchasing power of many gemologists.

Difficult gemological problems are now reserved for a handful of laboratories with the needed equipment. Consequently, the serious full-time gemologist may now have to take a new path if he wishes in the future to have a mission in this fascinating field of gems. We must sharpen our natural senses, apply them wherever possible and use them in conjunction with logic.

The new zirconia gives us an ample opportunity to quickly identify it as a non-diamond without the use of any gemological equipment, not even the loupe. In the practical marketplace it is not important to know if a stone is a zirconia, djevalite or GGG. The importance lies in establishing it as a non-diamond, and that is not difficult to do if one knows how.

Recently on one of my trips I learned the "touch of a diamond" from an old diamond dealer. These old-time dealers have their own language, a language we modern science-oriented gemologists can learn a lot from if we expose ourselves to their wisdom. He performed the touch-test for me. He was able to FELL THE DIFFERENCE BETWEEN A DIAMOND AND A CUBIC ZIRCONIA - without looking.

His way of identification with fingers only drove a broadside right into my gemological way of thinking. Once home again I worked with the "touch-test" over and over again, until I could "feel" the difference between a diamond and a zirconia, even in my dreams. Then I carried out "touch-test" experiments with my jeweler customers to see if, in fact, I had gone mad or if others could also feel the difference. I did the experiment with 35 persons during half-hour sessions in my laboratory. So far, only 3 persons have failed to feel the difference at the end of a session.

HOW TO DO IT

This is no fairy tale (although my name is Hans Andersen and I come from Denmark!). It is the teaching of the touch.

1. Make yourself mentally ready for the experiment: perform it in a quiet place in order to concentrate fully. Sit down with a diamond and a zirconia of equal sizes. If you do not have a zirconia, use a YAG instead. Plan to devote one hour for the experiment.
2. If your fingers perspire you cannot perform the test. Therefore, gently rub your thumbs and forefingers against your clothes if you do perspire, but still leaving the natural skin greases on your fingers.
3. Become mentally aware of: the feeling of something being slippery (oil, grease) as opposed to something non-slippery (such as rubber).
4. Pick up the two stones with either thumb and forefinger, being strongly aware of which is the diamond and which is the non-diamond. Place the tables against either the thumbs or the forefingers, gently holding each stone against the culet with the other finger.
5. Apply gentle pressure against the culet and begin to rub the stones back and forth between the fingers. The stones should not tip over. If they do tip it is because you are pressing too hard.

You will find that the one stone may move just a little or not at all. It feels like it is stuck to the finger and the friction is like a piece of rubber. The stone that sticks to the finger in this way is the diamond. The other stone will continue to slide on the finger, feeling slippery, greasy or oily. This stone is the zirconia or YAG.

The "touch-test" is not magic. It might be nice to say that we had developed super-senses, but we haven't.

The "touch-test" is just as logical as is a grease belt or table in a South African diamond mine. Diamonds are attracted to grease whether on a grease table or on the fingers. Cubic zirconia and other non-diamonds slide away like the waste rock does.

You can do a lot with the sense of touch. While studying at the GIA I was taught by an instructor to feel jadeite. In the Hopi Indian reservation a trader showed me how to tell the difference between turquoise and chrysocolla - with the tongue.

As supporting evidence to the touch-test, try to perform the "drop-test" with a diamond and a zirconia. Drop both stones into the palm of your hand and you will find that the zirconia or YAG fall much harder than the diamond, due to their higher S.G.

Use the "rapid-sight" test when the stone is mounted. Look for the table reflection as a silvery blob around the culet. The pavilion of a zirconia has to be cut deeper than that of a diamond in order to achieve brilliancy. If this blob is the size of the table and it is dark, then the stone is either a diamond cut out of proportions (which is bad), or a zirconia.

If you can see the stone from the back, you will see that the zirconia has a ring on the girdle and is more transparent than the diamond. As mentioned in the GIA quarterly, the zirconia also has strong dispersion on the back facets.

* * * * * * * * * *

NOTES ON TRANSPARENT COLORED QUARTZ by Helen MacLeod, FGA

Quartz is not a "simple" mineral in the world of gemology, contrary to what many people may think. Today the gemologist must learn to distinguish synthetic yellow quartz as well as quartz irradiated by Cobalt 60. The latter treatment produces a lemon yellow color somewhat unlike that of natural citrine. The GIA indicates that this yellow color is not light stable.

Russian synthetic amethyst is now widely sold in Hong Kong and Japan. Importers and tourists may buy it as natural material. Natural amethyst itself poses additional problems. Amethyst with greatly varying dichroism exists. This is related to locality and, like inclusions, may be an indication of origin. African amethyst, which has not yet been extensively studied, has very vivid dichroism.

The optic figure is useful in studying quartz gems. Conoscopic observation can be achieved by the use of a strain-free (i.e., annealed) glass sphere held over the gem between crossed polars. This setup resolves the interference figure. The optic figure of quartz is very distinctive - the arms of the uniaxial cross are distinct except in the center; the intersection point is a blur or void. This is a result of rotary polarization of light. Natural quartz also has some other interesting characteristics. Typical amethyst is polysynthetically twinned according to the Brazil Law, and is therefore useless for electronic purposes. Quartz may be either right or left handed (the mirror image twins are called enantiomorphs) and during growth layers of different hand are laid down alternately, creating a series of thin, oppositely oriented layers.

Mineralogy texts indicate that amethyst is formed at a lower temperature than other quartz colors; also, its iron content (ferric) is greater than the corresponding aluminum content in smoky quartz. When heated, amethyst may turn a golden orange color. This is typical of amethyst points from geodes, which lack prism faces. The burned orange color is very dichroic. On the other hand, amethyst from Montezuma, Brazil burns to a green, rather than a citrine orange color.

The color of quartz is derived frequently from the presence of so-called "color centers", which are defects in the crystal often associated with transition metal impurities. This type of coloration is often very complex; in quartz it involves substitution of Al for Si, plus interstitial Na and Li, or the presence of ferric iron and hydroxyl. In some quartzes several color centers are present and the material can assume an intermediate shade.

(continued)

There are literature references (e.g. Webster, "Gems", 3rd ed., p.182; Anderson, "Gem Testing", 1971, p. 167; GFH Smith, "Gemstones", 1972, p. 367) pointing to an inaccurate conclusions regarding quartz dichroism. It has always been assumed that amethyst which has been heat treated loses its dichroism when it turns yellow, and that only natural citrine is dichroic. This assumption is inaccurate as was indicated earlier. Quartz with complex color centers may show dichroism in a smoky phase and none in an amethyst phase. Such material, when heated, might well produce a citrine without any dichroism. But NOT all amethyst burns to a non-dichroic yellow.

It is also interesting to note that much, perhaps most of the citrine on the gem market is burned amethyst. Natural dark colored citrine is very rare, but at least one locality is substantiated, at Crystallina Brazil, between Ouro Preto and Brasilia. Kenneth Zahn, President of the American Federation of Gem and Mineral Societies, once saw a bright orange citrine crystal, flawless and weighing about 30 pounds, among the crates of surplus quartz offered for bids at the U.S. Treasury warehouse in Pennsylvania.

It would ve very valuable from a gemological point of view to assemble a collection of amethysts illustrating different dichroic colors. Such dichroism may be unpredictable and not related to depth of color. Color pairs include light and dark purple, dull and bright purple, reddish-purple and bluish-purple; African material may even show red and blue as dichroic colors! Rough material is usually easier to work with than cut gems. The exact illumination used should be recorded, and the strongest possible color contrast observed reported. Fluorescent light should never be used. The best light to use is sunlight, which contains a balanced mixture of wavelengths. A tensor lamp at high voltage may also be satisfactory.

"Hybrid quartz" (containing several types of color centers) has been the source of contradictory statements in the literature about quartz treatment. Natural radiation in the earth produces smoky and amethyst colors; natural heating of quartz may also convert amethyst to citrine. It is virtually impossible to tell a naturally heated from an artificially-heated quartz. However, too much heating can bleach the material completely (temperatures over 400° C.). The desired color may sometimes be restored by irradiation. But not all irradiation procedures are comparable to the natural process that creates the quartz colors in the ground.

Colorless hybrid quartz is irradiated with Cobalt 60 (mostly in Japan) to create a yellow color, as mentioned earlier. Sometimes a smoky quartz will turn yellow when heated. An amethyst may be overheated and lose color entirely; but an attempt to restore the original purple with irradiation sometimes produces a smoky color instead! Heating of quartz is usually accomplished on a bed of white sand, with gentle heat applied from below. The setup is guarded from drafts to avoid thermal shock. Just as soon as the original color starts to fade out, the heat is turned down or off, and a new color appears when the material is cool. Larger pieces are heated very slowly. A maximum temperature of about 500° C. is recommended. It is simple to experiment heating quartz, and the gemologist is urged to try it to get a better feel for this process that is so important in the gem trade.

TESTS: Some synthetic yellow quartz, which contains cobalt, turns pinkish blue when heated. A delicate megnetism test might possibly be developed that could detect this cobalt. The heated blue material (sometimes sold to unsuspecting tourists as aquamarine) looks pink in the Chelsea filter. This reaction is similar to pale blue synthetic spinel (which also contains cobalt).

Colored quartz offers a vast and fascinating area for study by gemologists. AGA members are urged to experiment with quartzes they encounter and report their findings to the Newsletter. For background, the following excellent references are provided:

Hutton: Defects in the Color Varieties of Quartz: J. Gemmology, 1973, V. 14
Frondel: Dana's System of Mineralogy, Volume III (Silica Minerals)

(Thanks are extended to Theresa Zook, FGA, for assistance in editing the above article)

* * * * * * * Ed.

From the PreciouStones Newsletter, July 1978:

CHANDLER'S FIRST LAW OF SYSTEMS DYNAMICS: Once you open a can of worms, the only way to recan them is to use a larger can.

IDOCRASE OR LOW INDEX GROSSULAR GARNET by E. A. "Ted" Brockie, GG

(the following is condensed from an article of this title in the magazine Jewellery World, the magazine of the Canadian Jewelry Industry, April/May, 1978, p. 14)

When transparent gems are tested, there is what is considered to be "normal" behavior from doubly refractive and singly refractive gems. That is, there are unique differences that provide highly definitive tests in gem identification.

However, when there is an intergrowth of one material into another, it is both interesting and, at first, confusing. Such was my reaction when my friend Paul Leonard R.J.(A.G.S.) of Cobourg, Ont. sent me a transparent brownish-green idocrase for examination and testing. The gem is oval and weighs approximately 1.65 carats.

In the "dark" position of the polariscope, interference colours abounded, regardless of the gem's position. None of the colours could be resolved into a bona-fide interference figure. While there was the expected blinking on and off, the idocrase behaved much more like a strongly strained isotropic gem.

The mounted gem provided a firm R.I. of 1.721, but no birefringence was noted on the refractometer.

Under magnification there was such a strong heat-wave effect that it was impossible to focus the microscope to seek out any doubling of back facets. The gem was almost clean except for some nondescript whitish-appearing fractures.

The idocrase was inert under short-wave and long-wave ultraviolet.

Until this point the doubly refractive idocrase was testing out more like singly refractive grossular garnet of low R.I. However, at last came a highly definitive doubly-refractive reaction with the dichroscope, i.e. a strong green and a yellowish-brown pleochroism.

A look at the gem's spectrum further sealed its doom as an ill-fated attempt, after quick, routine testing, to appear as a strained garnet. There was a strong band at 4600 AU and a rare earth line at 5150 AU.

The gem literature was consulted. Webster's "Gems" (2nd ed.) states that it has been "suggested that a tetragonal variation of the garnet molecule is present in idocrase". In Arem's "Color Encyclopedia of Gemstones" it is stated that an "incredible array of elements substitute in the idocrase structure" and "idocrase is often intergrown with grossular".

I find this little incident noteworthy for two reasons: it shows how rapid testing could have produced an unhappy "identification" and it stresses the need for constant acuity as well as employing every piece of testing apparatus at the gemologist's disposal.

* * * * * * * *

Notes to the above article, provided by Joel E. Arem, Ph.D., FGA

A material called "californite" was described by Kunz early in the 20th century. This material is an intimate mixture of idocrase and grossular with a jadelike appearance, that has been used off and on as a decorative material, usually green in color. The crystal structures of idocrase and garnet are very similar, which is a ready explanation for the frequent intergrowth of the two minerals. However, the problem is much more subtle and much grander in scope. Calcium is a large divalent ion that creates all kinds of problems in silicate crystal structures. Anyone who knows something about the chemistry of cements will rave on in gory detail about the unbelievable complexity of the phases involved and their interaction. To date nobody yet fully understands the total process of the hardening of Portland cement. It is well known in mineralogy that calcium garnets are NOT isotropic, whereas the aluminous garnets are. Moreover, the crystal structure of idocrase has not yet been fully resolved after years of research. It may well turn out that BOTH idocrase and grossular are composed of complexly twinned low symmetry units (perhaps even triclinic!) resulting in pseudoisometric and pseudotetragonal structures. The twinning cannot be revealed by X-ray diffraction, for a variety of very complex reasons. A more extensive article on this may appear in a later Newsletter.